

CLAIMS:

1. A woodworking machine having a cutting region for cutting workpieces,
comprising:

5 a movable cutting tool for cutting workpieces in the cutting region;

a detection system adapted to detect one or more dangerous conditions between a
person and the cutting tool; and

a reaction system associated with the detection system and the cutting tool, where
the reaction system is configured to retract the cutting tool at least partially away from
the cutting region upon detection of at least one of the dangerous conditions by the
detection system.

2. The machine of claim 1, where the detection system is adapted to detect
15 accidental contact between a person and the cutting tool, and where the reaction system is
configured to retract the cutting tool at least partially away from the cutting region upon
detection of such contact by the detection system.

3. The machine of claim 1, where the detection system is adapted to detect dangerous proximity between a person and the cutting tool, and where the reaction system is configured to retract the cutting tool at least partially away from the cutting region upon detection of such proximity by the detection system.

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4. The machine of claim 1, where the cutting tool includes a rotatable blade having angular momentum when rotating, and where the reaction system is configured to retract the blade by using, at least partially, the angular momentum of the blade.

5. The machine of claim 4, where the reaction system includes a brake mechanism configured to stop the rotation of the blade upon detection of the at least one dangerous condition by the detection system.

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6. The machine of claim 1, where the reaction system is configured to retract the cutting tool away from the cutting region within approximately 14 milliseconds after the at least one dangerous condition is detected.

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7. A woodworking machine comprising:

a frame adapted to support workpieces in a cutting region;

a movable cutting tool supported by the frame and configured to cut workpieces in the cutting region;

5 a motor configured to drive the cutting tool;

a detection system configured to detect one or more dangerous conditions between a person and the cutting tool; and

a brake mechanism including at least one braking component configured to engage and stop movement of the cutting tool upon detection of at least one of the dangerous conditions by the detection system, where engagement of the braking component with the cutting tool tends to urge the cutting tool in a direction away from the cutting region.

8. The machine of claim 7, where engagement of the braking component with

15 the cutting tool causes the cutting tool to move out of the cutting region.

9. The machine of claim 7, where the rotating cutting tool has angular

momentum, and where the braking component is configured to transform at least a

20 portion of the angular momentum of the cutting tool into a force on the cutting tool in a direction away from the cutting region.

10. The machine of claim 7, further comprising a rotatable shaft pivotally coupled to the frame, and where the cutting tool is mounted to rotate about the shaft and pivot toward and away from the cutting region, and where the engagement of the braking component with the rotating cutting tool causes the cutting tool and shaft to pivot away from the cutting region.

11. The machine of claim 7, where the detection system is configured to detect accidental contact between a person and the cutting tool, and where the braking component is configured to engage and stop movement of the cutting tool upon detection of such contact by the detection system.

12. A woodworking machine, comprising:

cutting means for cutting workpieces;

means for detecting accidental contact between a person and the cutting means;

and

means for retracting the cutting means away from the person in response to such detection of accidental contact.

13. The machine of claim 12, further comprising means for rotationally driving the cutting means during cutting, and means for stopping rotation of the cutting means in response to detection of accidental contact between a person and the cutting means.

14. The machine of claim 13, where the rotating cutting means has angular momentum, and where the means for stopping rotation of the cutting means uses at least a portion of the angular momentum to retract the cutting means away from the person.

15. A method for minimizing potential injuries from a woodworking machine having a movable cutting tool, the method comprising:

detecting accidental contact between a person and the cutting tool; and

retracting the cutting tool away from the person in the event accidental contact

5 between the person and the cutting tool is detected.

16. The method of claim 15, where the cutting tool rotates and has angular momentum, and where the step of retracting includes using at least a portion of the angular momentum of the cutting tool to retract the cutting tool away from the person.

17. The method of claim 16, where the cutting tool has one or more teeth adapted to cut workpieces, and where the step of retracting includes moving a braking component into the teeth of the rotating cutting tool.

18. The method of claim 15, further comprising the step of stopping movement of the cutting tool in the event accidental contact between a person and the cutting tool is detected.